NHTSA-2008-0019

First Technology
Innovative Solutions

DEPT. OF TRANSPORTATION
DOCKETS

2008 NOV -7 A 11:15

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Nicole R. Nason, Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, SE
Washington DC 20590

Dear Ms Nason,

Subject: Final Rule, Response to Petitions for Reconsideration, Technical Amendment, Docket No. 2008-0111, Anthropomorphic Test Devices; ES-2re Side Impact Crash Test Dummy 50th Percentile Adult Male.

First Technology Safety Systems (FTSS) has reviewed the February, 2008, ES-2re dummy drawing package (identified in the above mentioned technical amendment) and we have identified a number of drawing errors and a number of drawing issues. We seek to petition NHTSA to correct these drawings to ensure that the ES-2re dummy continues to meet the same dimensional and performance requirements established for the dummy when the dummy was proposed for inclusion into 49 CFR Part 572 Subpart U. FTSS makes the following comments and recommendations with respect to the drawing package. A marked up drawing for each of these recommended changes are attached to the end of this letter.

1) Drawing 175-1011, Top Plate UNLC Blank. Fix typographical errors for dimensions, MØ5.0, MØ6.0, MØ6, and MØ2.5. Eliminate the Ø symbol.

2) Drawing 175-3502, Pivot Stop Plate, Left. Fix typographical error on Note #4. Replace RH with LH since this is a left hand part.

3) 175-6006, Pubic Symphysis Structural Replacement. There is a Part Mark located at the center of the part. This Part Mark is not defined. FTSS recommends that the Part Mark be clarified or removed altogether from the drawing.

4) Drawing 175-6012, Hip Pivot Pin. FTSS believes that dimension "16.994 +0.000 / -0.011" is a typographical error and should be dimensioned as "16.990 +0.000 / -0.011". The Hip Pivot Pin mates to part number 5000110 (Ball Bearing) – which has an ID dimension of 17.000 +0.000 / -0.008 (vendor specification). The bearing at a nominal dimension of 16.992 would not allow a Hip Pivot Pin at its maximum diameter of 16.994 to fit within the bearing.

5) Drawing 175-6010, Iliac Wing Assembly, Left. Fix typographical error for drawing dimension "17.0556". This dimension should be "17" since it is not reasonable to control and measure this molded part to four decimal places and "17" also matches the same dimension as the Iliac Wing Assembly, Right (NHTSA Drawing 175-6002). FTSS also recommends that the drawing dimension "Ø20.03" be replaced with "Ø20.03 ± 0.10" since this dimension cannot be controlled to a tolerance of ± 0.05. We also recommend the addition of dimension "R0.5" to better define this location for easier machining of this particular section of the part and to prevent breakage due to concentrated stresses.

6) Drawing 175-6063, Femur Bearing Plate, Left. Fix typographical errors for drawing dimensions 17.5000 ± 0.0001" and "48.3000 ± 0.0001". The tolerances are too tight to reasonably achieve at four decimal places and would add unnecessary expense when making the part. FTSS recommends that these dimensions should be specified as "17.5 ± 0.5" and "48.3". These recommended dimensions would also match the existing dimensions on the Femur Bearing Plate, Right (NHTSA Drawing 175-6068).

7) Drawing 175-6068, Femur Bearing Plate, Right. Fix typographical errors by removing the parenthesis from around dimensions "(48.3)" and "(17.5 ± 0.5)". This will maintain consistency between NHTSA Drawings 175-6068 and 175-6063.

8) Drawing 175-6002, Iliac Wing Assembly, Right. FTSS recommends that the drawing dimension "Ø20.03" be replaced with "Ø20.03 ± 0.10" since this dimension cannot be controlled to ± 0.05. We also recommend the addition of dimension "R0.5" to better define this location for easier machining of this particular section of the part and to prevent breakage due to concentrated stresses.

9) Drawing 175-2003, Plate, Neck Head & Torso Interface. FTSS recommends that NHTSA part number 5000049 Helicoil, M6 x 1 x 6, be replaced with part number 5000729 Helicoil M6 x 1 x 4.5 because the 5000049 Helicoil is too long and may not sit below the machined surface due to stack up tolerance of parts. FTSS also suggests the addition of dimension "4X R3.2 ⌯ to the Surface" on Detail Z in order to clarify the dimension.

10) Drawing 175-3000, Shoulder Assembly. FTSS recommends that NHTSA part number 5000014 SHCS, M6 x 1 x 35, be replaced with part number 5000008 SHCS, M6 x 1 x 30 because the 5000014 SHCS is too long to properly secure the assembled parts. The M6 x 1 x 35 SHCS is supposed to secure the Shoulder Top Plate (175-3008) to the Shoulder Spacer Block (175-3002). However, the Shoulder Top Plate has a material thickness of 8 mm and the Shoulder Spacer Block has a material thickness of 25.5 mm. Together, the overall thickness of the combined parts is 33.5 mm – which is 1.5 mm shallower than the length of the 35 mm long SHCS. This will create a condition where the 35 mm SHCS will not clamp the parts properly. A M6 x 1 x 30 SHCS will provide a 3.5 mm clearance to the bottom of the threaded holes on the Shoulder Spacer Block and is therefore an appropriate fastener for this application.

11) Drawing 175-3011, CAM Buffer Pad. FTSS has noted that the current dimensions for this part have tolerances that are too tight to accurately control a molded part. We recommend that the NHTSA drawing dimensions: "Ø5.0", "90.0", "5.0", and "21.2 ± 0.2" be replaced with these dimensions: "Ø5", "90", "5", "21.2 ± 0.3".

12) Drawing 175-7058, Friction Plate Retaining Stud. FTSS believes that the Datum A tolerance of ".0003" for the perpendicular surfaces is unnecessarily tight at four decimal places. We recommend a tolerance of ".003" because the NHTSA tolerance is too tight to be reasonably measured and therefore accurately controlled. Furthermore, at tolerance of ".0003" would add unnecessary cost to the part.

13) Drawing 175-7085-1, Knee Flesh, Left. There is a note on the drawing that states: ¼" OVER WIDTH "A" FOR 180°. But, "A" is not defined on the drawing. However, "A" is defined on the corresponding drawing 175-7085-2, Knee Flesh, Right. FTSS recommends that drawing 175-7085-1 be corrected to add a definition for "A" to match drawing 175-7085-2 – which specifies that "A = 1 – ¾".

14) Drawing 175-7090-1, Thigh Molded, Left. Fix typographical errors for drawing dimensions "(2x ØØ24)" and "(2x Ø14)". These dimensions should be listed as "(2x Ø24)" and "(2x14)". Removal of extra or redundant Ø symbol is required. This would also make this part consistent with the Thigh Molded, Right drawing (NHTSA Drawing 175-7090-2).

15) Drawing 175-9013, Bearing. The drawing has a reference to Note#2 in the revision record (REV B), but the note is missing from the "NOTES" field. FTSS recommends that the note be added to the note field, or the note reference be eliminated from the revision record.

16) Drawing 175-9014, Pin Machined. Correct typographical error for missing revision indicator for REV B on the Material Reference. The revision record states "ADDED REF. TO MATERIAL SPECIFICATION"; however no revision reference bubble was added.

17) Drawing 175-9027, Lower Mounting Base. FTSS recommends that the following NHTSA dimensions "92.5 +0 / - 0.2", "66.5 +0 / -0.2", and "4 x 6 x 45°" be replaced with "91.4 +0 / -0.2", "66.0 +0 / -0.2", and "4 x 9.7 x 45°" respectively. We recommend these changes due to the wider tolerances associated with typical product dimensions specified for the 3" x 4" tubular steel beam that the Lower Mounting Base fits into. These tolerances are typically ± 0.030 for the tubular beam so our recommended dimensional changes for the Lower Mounting Base is necessary to guarantee that the Lower Mounting Base will fit into the wide variety of pendulums beams in the marketplace.

18) Drawing SA572-S71-1, Lower Neck Load Cell Assembly. FTSS recommends that specification of the part weight be correct to include the weight of the two connector/cable assemblies. The weight currently specified for this part in the NHTSA drawing is "0.8 lb. / 0.36 kg MAX." However, this weight does not include the weight of the electrical connector/cable assemblies. Since the cables are hard wired to the load cell, they need to be included in the total weight. Therefore, we request that the assembly weight be listed as "0.93 lb. / 0.42 kg MAX" to include the two cable assemblies.

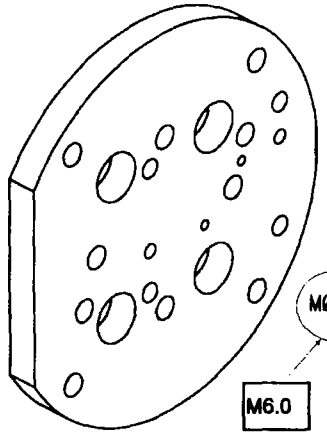
If you have any questions regarding these comments to the Final Rule, Response to Petitions for Reconsideration, Technical Amendment, please contact me at (734) 446-3132 or at jbastian@ftss.com.

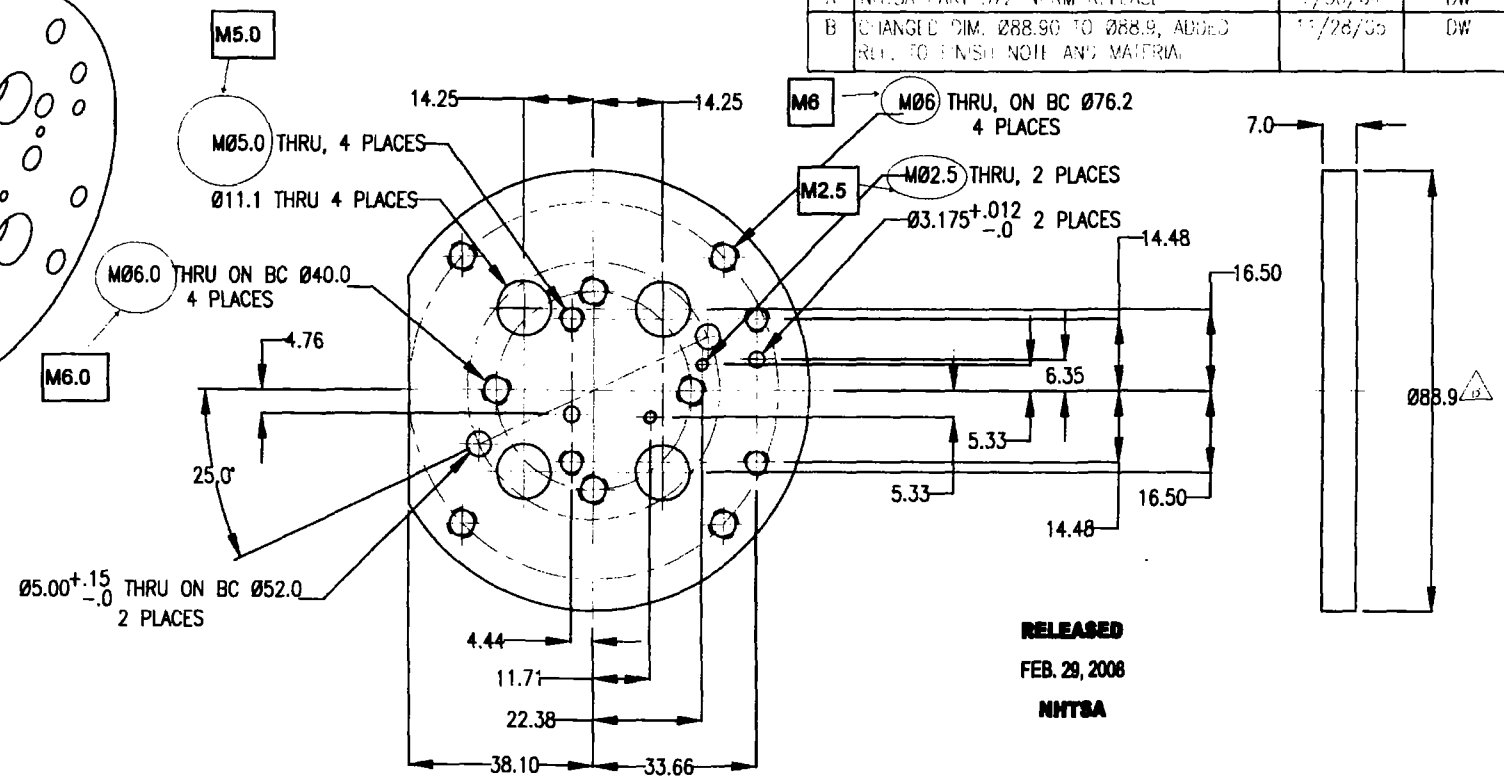
Sincerely,

Joseph Bastian
Engineering Manager
First Technology Safety Systems, Inc

cc: Jerry Wang

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	CHANGED DIM. Ø88.90 TO Ø88.9, ADDED REF. TO FINISH NOTE AND MATERIAL	11/28/05	DW





RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. SURFACE FINISH SHALL NOT EXCEED 1.6 MICRONS.
2. REMOVE ALL BURRS AND SHARP EDGES.
3. FINISH REF.: CHEMI-BLACK

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED: 63
* unless otherwise noted

MATERIAL REF. STEEL 080M40
SCALE 1.000

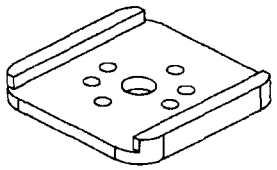
APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

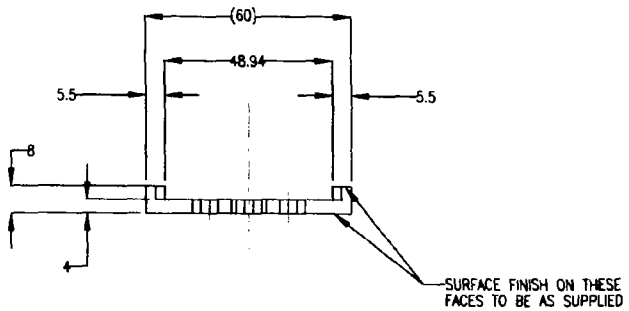
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

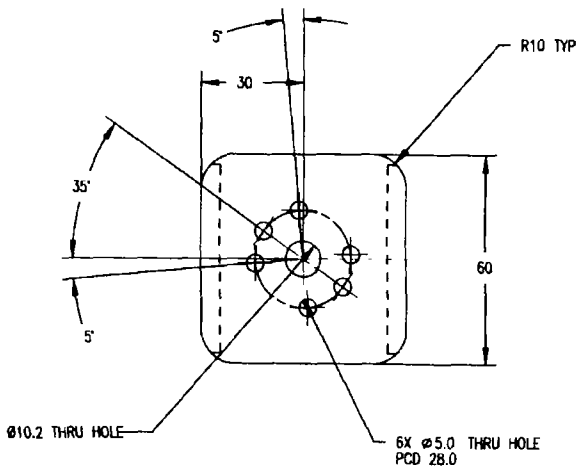
TOP PLATE UNLC BLANK

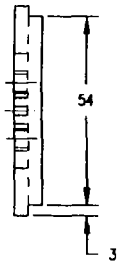
SIZE	SHEET	DRAWING NUMBER	REV.
A3	1 OF 1	175-1011	A

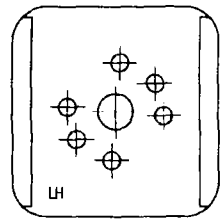
REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED REF. TO MATERIAL SPECIFICATION, REVISED NOTE #4	12/28/05	DW







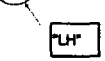




RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. MACHINED SURFACE FINISH TO BE 0.8 OR BETTER.
2. REMOVE ALL BURRS AND SHARP EDGES.
3. SURFACES TO BE FREE FROM SCRATCHES AND INDENTATIONS.
4. MARK "RH" WITH INDELIBLE INK OR EQUIVALENT AS SHOWN.



ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			

UNITS ARE millimeters

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED:

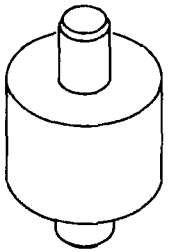
MATERIAL: POLYCARBONATE
SCALE: 1.000

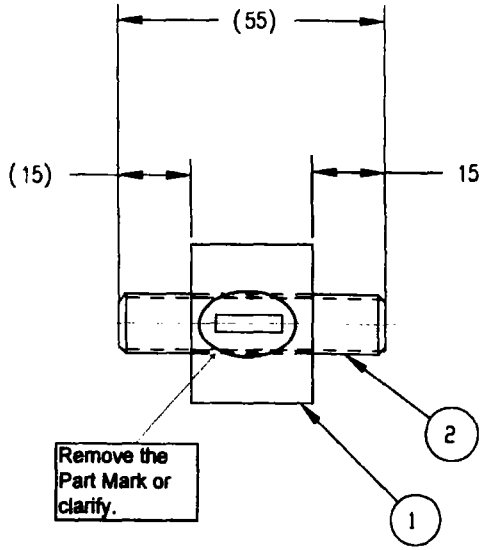
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

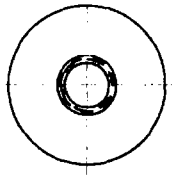
PIVOT STOP PLATE, LEFT

SIZE: A2 | SHEET: 1 OF 1 | DRAWING NUMBER: 175-3502 | REV: B

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	11/30/04	DW
B	REMOVED "PART MARK" NOTE #2	12/6/05	DW







RELEASED

FEB. 29, 2008

NHTSA

NOTES:

1. BOND ITEM #1 AND ITEM #2 USING LOCTITE 601 STUD LOCK.

ITEM NO.	QTY	PART NO.	DESCRIPTION
2	1	175-6008	STUD, STRUCTURAL REPLACEMENT
1	1	175-6007	SPACER, STRUCTURAL REPLACEMENT

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *

DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05

ANGLES: ±0.5°

MACHINED: 63

* unless otherwise noted

MATERIAL

SCALE 1.000

APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

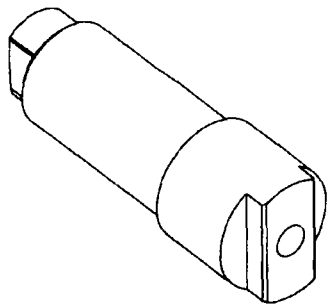
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

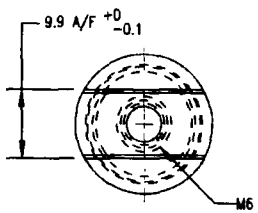
PUBIC SYMPHYSIS

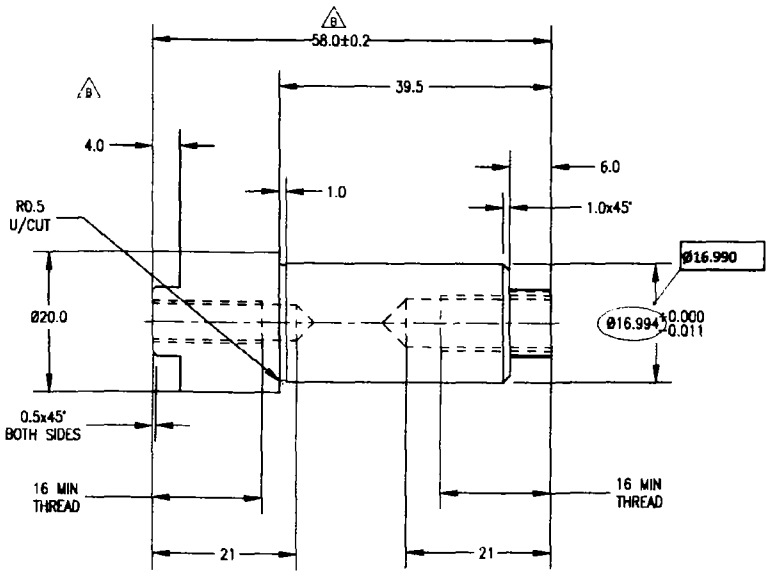
STRUCTURAL REPLACEMENT

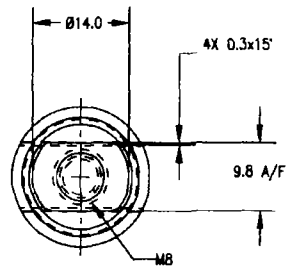
SIZE	SHEET	DRAWING NUMBER	REV.
A3	1 OF 1	175-6006	B

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	REMOVED THREADS NOTE #2 & PART MARK NOTE #3, ADDED REF. TO MATERIAL SPECIFICATION & FINISH NOTE #3, CHANGED DIMENSION (58) TO 58.0 ±0.2 AND REMOVED 14.5 DIMENSION	12/6/05	DW









RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. SURFACE FINISH TO BE 0.8
2. REMOVE ALL SHARP EDGES AND BURRS
3. FINISH REF.: CHEMI-BLACK

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			

UNITS ARE millimeters

MATERIAL REF: 080M40 STEEL (EN8)

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED:

SCALE: 2.000

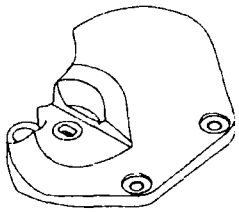
APPROVALS / DATE

DRAWN
CHECKED
ENGINEER

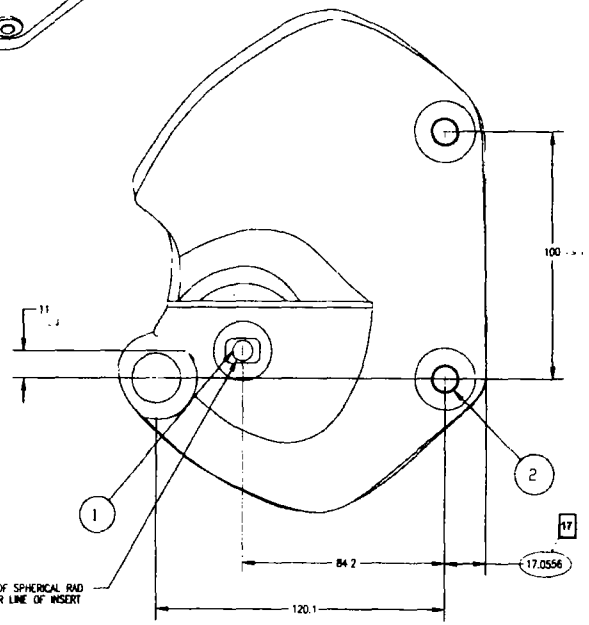
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

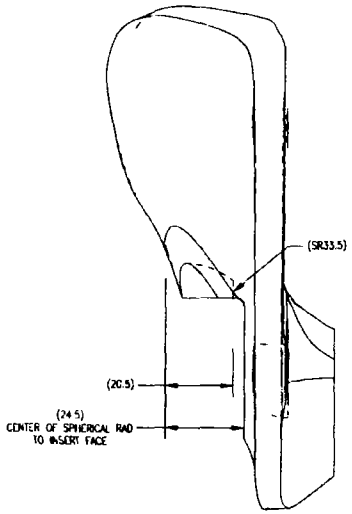
HIP PIVOT PIN

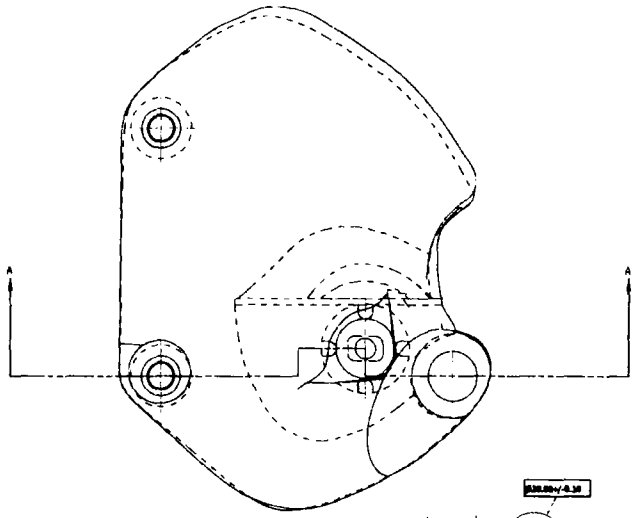
SIZE: A2 | SHEET: 1 OF 1 | DRAWING NUMBER: 175-6012 | REV: B

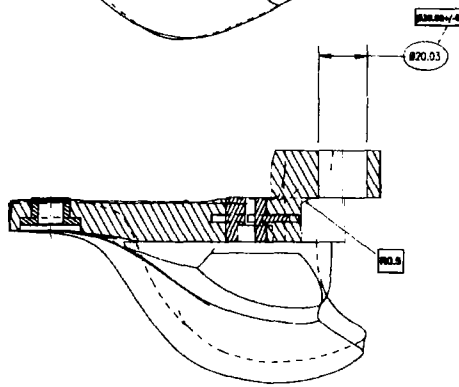


SCALE 0.500









SECTION A-A

NOTES:

1. DEBURR
2. ALL TOLERANCES OTHER THAN HOLE CENTERS ±1mm.

ITEM NO.	QTY	PART NO.	DESCRIPTION
2	2	175-6003	ILIAC WING INSERT (TOP HAT)
1	1	175-6004	ILIAC WING INSERT

PART LIST

UNITS ARE millimeters

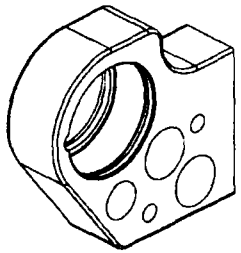
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

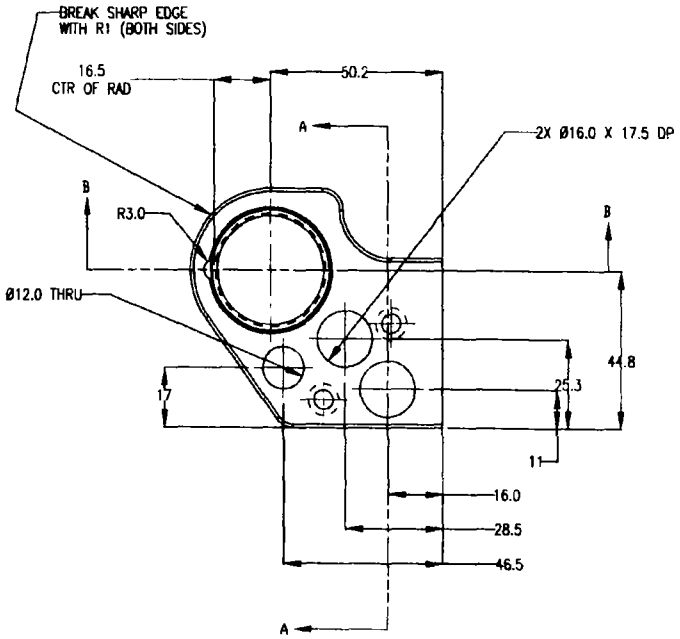
SCALE 1.000

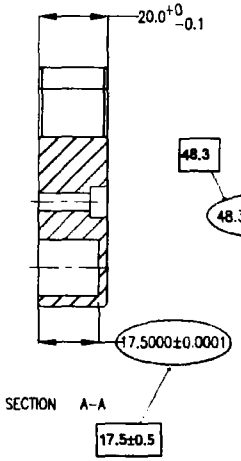
ILIAC WING ASSEMBLY, LEFT

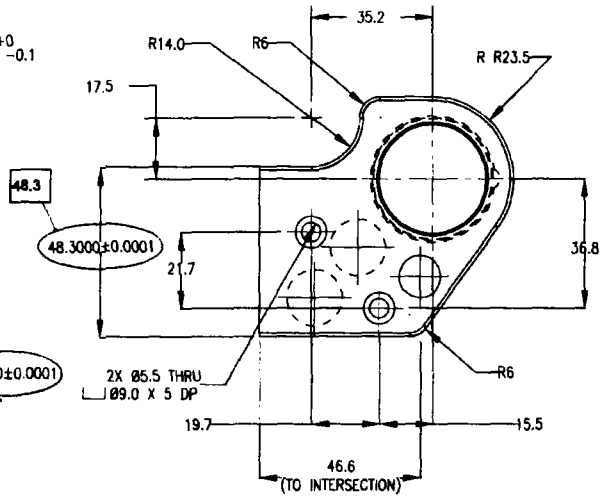
SIZE A1 | SHEET 1 OF 1 | 175-6010 | REV B

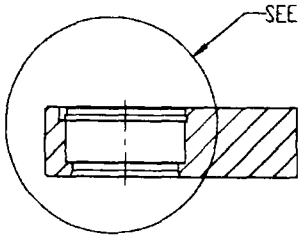
REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	1/30/04	DW
B	ADDED REF TO MATERIAL SPECIFICATION	12/8/05	DW



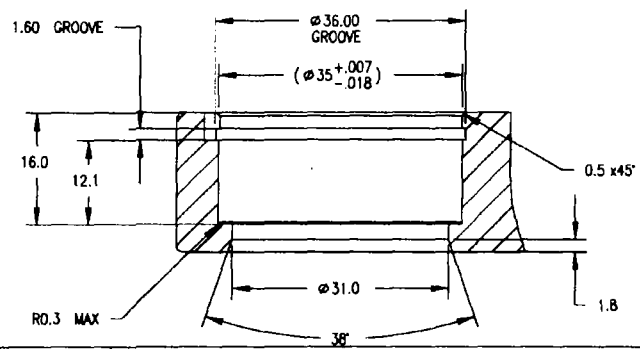








SECTION B-B



RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. REMOVE ALL BURRS AND BREAK SHARP EDGES.

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			

UNITS ARE millimeters

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED:

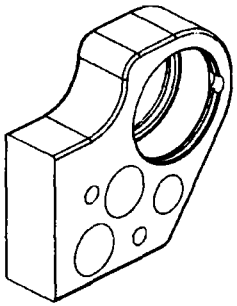
ORIGINAL MAT'L: 080M40 STEEL (EN8)
SCALE: 1.000

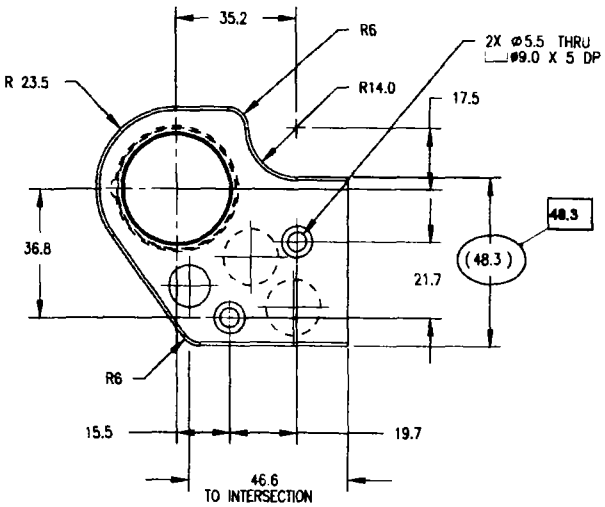
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

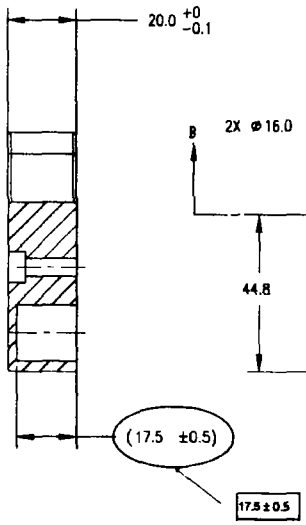
FEMUR BEARING PLATE, LEFT

SIZE	SHEET	DRAWING NUMBER	REV.
A2	1 OF 1	175-6063	B

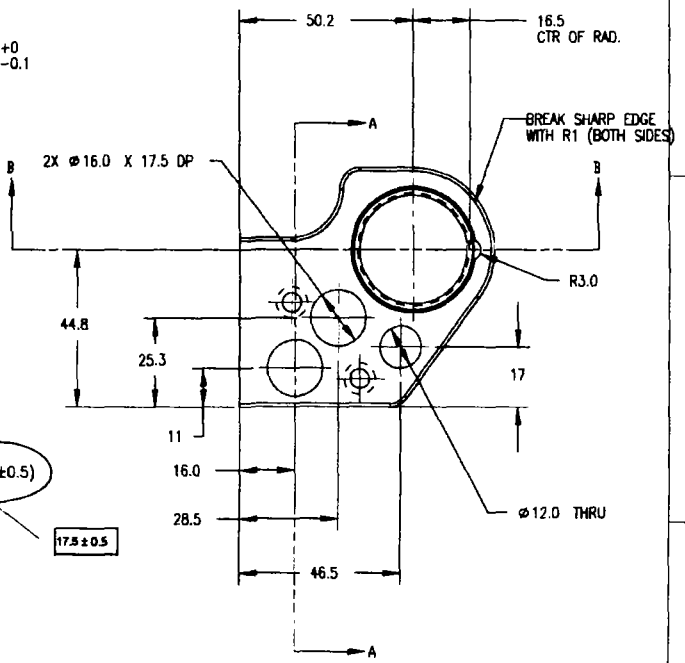
REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED REF. TO MATERIAL SPECIFICATION	12/8/05	DW

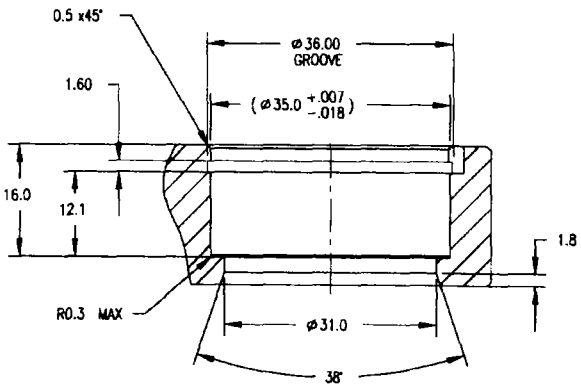






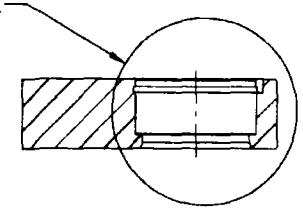
SECTION A-A





DETAIL Z
SCALE 2.00

SEE DETAIL Z



SECTION B-B

RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. REMOVE ALL BURRS AND BREAK SHARP EDGES.

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE millimeters

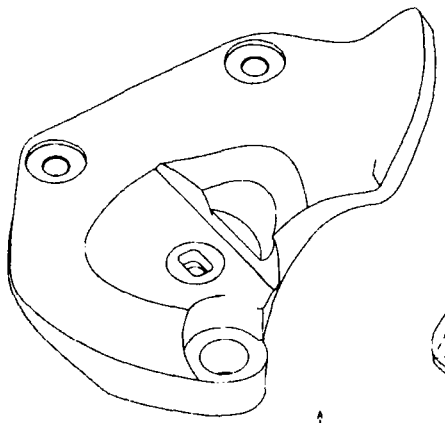
TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED: 63
* unless otherwise noted

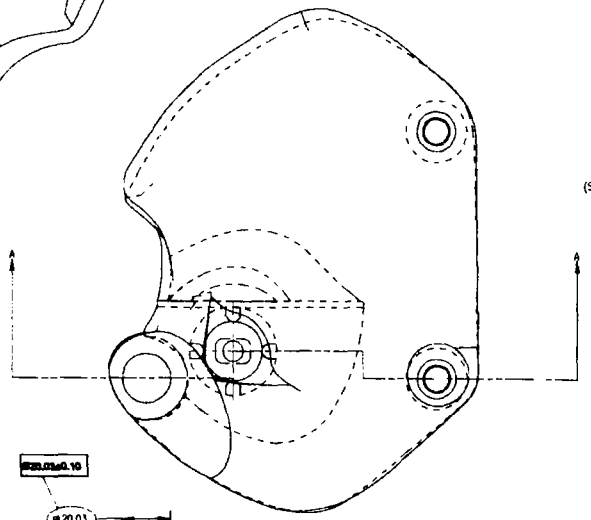
MATERIAL REF: 080M40 STEEL (EN8)
SCALE: 1.000
APPROVED | DATE
DRAWN
CHECKED
ENG APPR.

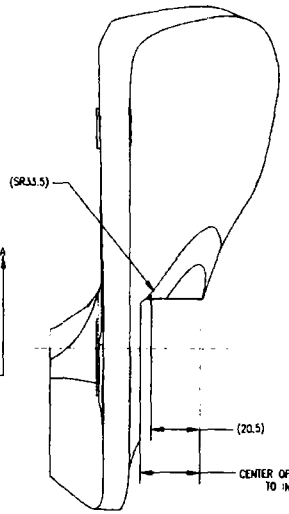
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

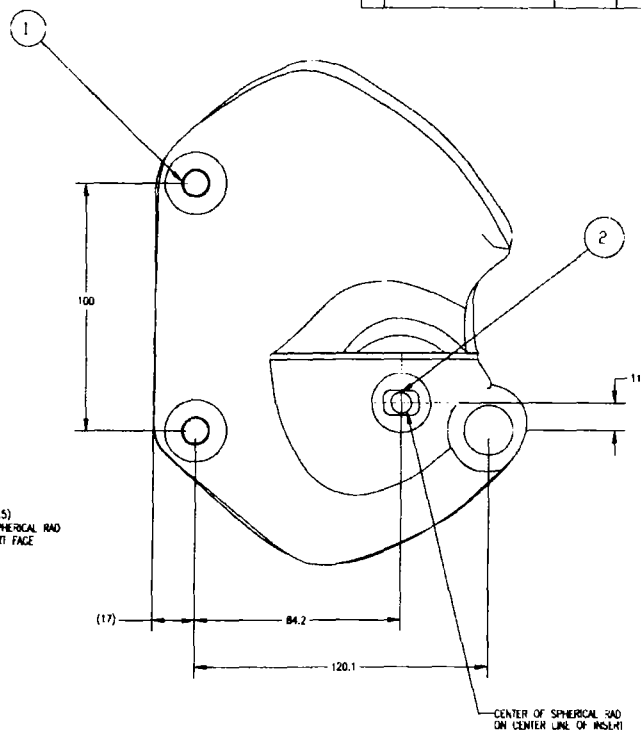
FEMUR BEARING PLATE, RIGHT

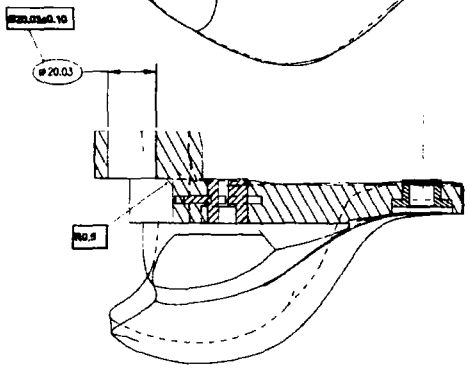
SIZE: A2 | SHEET: 1 OF 1 | DRAWING NUMBER: 175-6068 | REV: B











SECTION A-A

REVISION RECORD

REV	DESCRIPTION	DATE	BY
1			

NOTES.

1. DEBURR
2. ALL TOLERANCES OTHER THAN HOLE CENTERS ±1mm

RELEASED
FEB. 29, 2008
NHTSA

ITEM NO.	QTY	PART NO	DESCRIPTION
2	1	175-6004	ILIAC WING INSERT
1	2	175-6003	ILIAC WING INSERT (TOP HAT)

PART LIST

UNITS ARE millimeters

PU RESIN

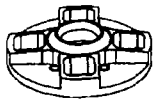
1.000

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

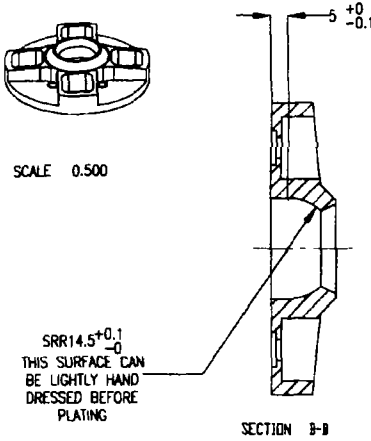
ILIAC WING ASSEMBLY, RIGHT

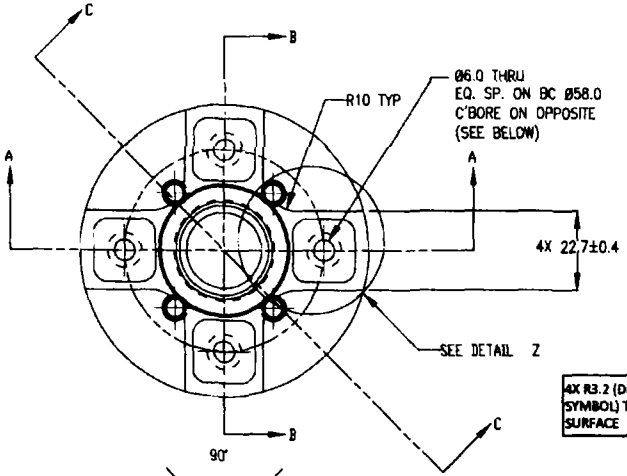
SIZE	SHEET	175-6002	REV
A1	1 OF 1		B

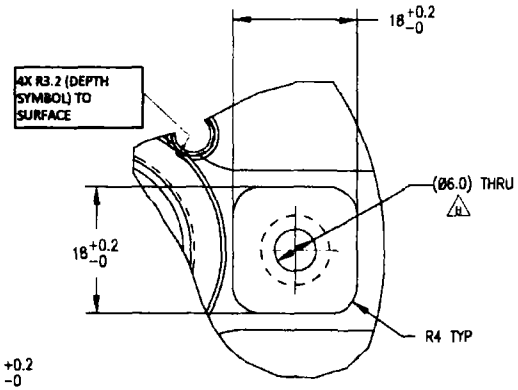
REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	CHANGED DIMENSIONS, Ø84.00 TO Ø84.0 & Ø6 TO Ø6.0, ADDED REF. TO MATERTIAL SPECIFICATION, REMOVED NOTES 3, 4, 5 & 6	11/29/05	DW



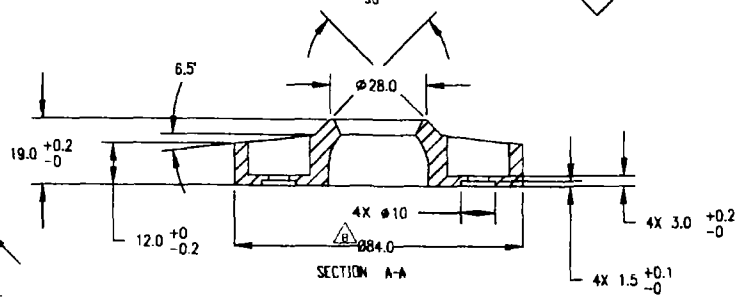
SCALE 0.500



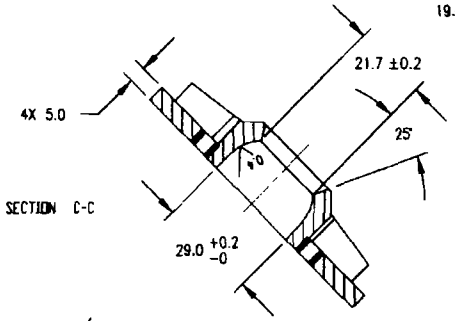


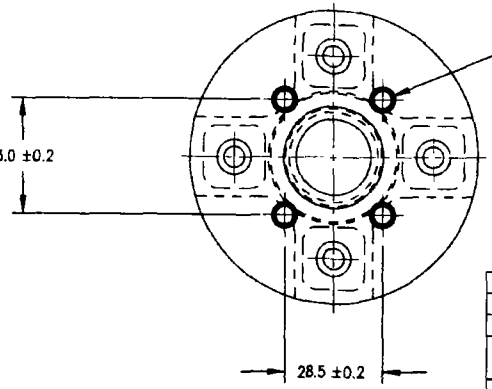


DETAIL Z
SCALE 2.00



SECTION A-A





NOTES:

1. SURFACE FINISH TO BE 0.8 OR BETTER ALL OVER UNLESS OTHERWISE STATED.
2. REMOVE ALL BURRS AND BREAK SHARP EDGES PRIOR TO ANODISING.

RELEASED
FEB. 29, 2008
NHTSA

5000729 — HELICOIL, M6 X 1 X 4.5

ITEM NO.	QTY	PART NO.	DESCRIPTION
1	4	5000049	HELICOIL, M6 X 1 X 6

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED: 63
* unless otherwise noted

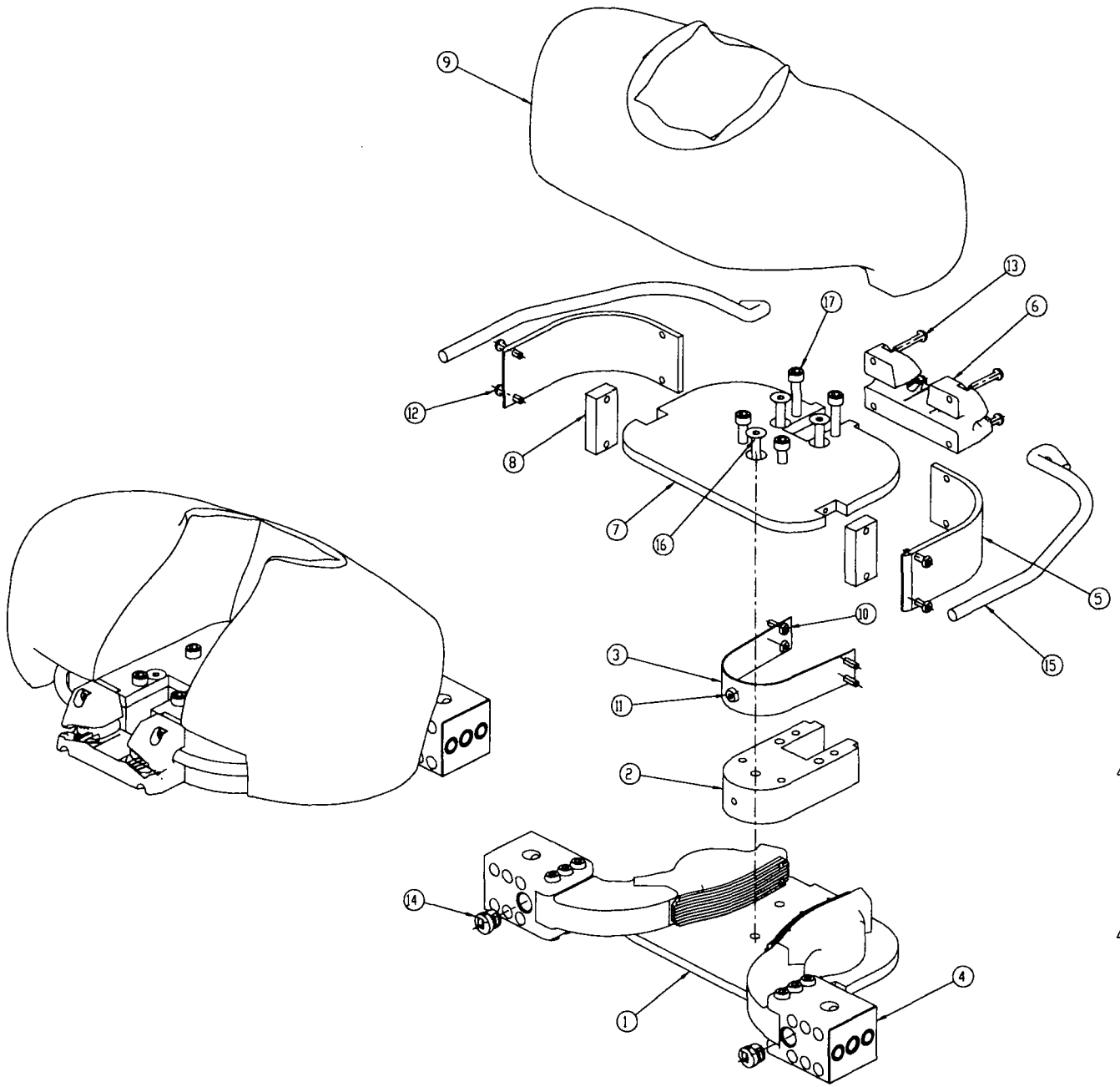
6082 (HE30) ALUMINUM
SCALE 1.000

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

PLATE, NECK HEAD & TORSO INTERFACE

SIZE A2 | SHEET 1 OF 1 | DRAWING NUMBER 175-2003 | REV B

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	CHANGED ITEM #17 FROM PART NO. 5000008 – SCREW, SHCS M6 x 1 x 30 TO PART NO. 5000014 – SCREW, SHCS M6 x 1 x 35, ITEM #4 DESCRIPTION WAS "SHOULDER CAM CLAVICLE ASSEMBLY FOR LOAD CELL"	1/5/06	DW



RELEASED
FEB. 29, 2008
NHTSA

5000133 Screw, SHCS M6 X 1 X 25

ITEM NO.	QTY	PART NO	DESCRIPTION
17	4	5000014	SCREW, SHCS M6 X 1 X 35
16	3	5000009	SCREW, FHCS M6 X 1 X 50
15	2	175-3015	BUNGEE CORD
14	2	9002370	BUSHING
13	4	5000004	SCREW, BHCS M4 X 0.7 X 25
12	4	5000007	SCREW, BHCS M4 X 0.7 X 20
11	1	5000003	SCREW, BHCS M5 X 0.8 X 10
10	4	5000005	SCREW, BHCS M4 X 0.7 X 12
9	1	175-3010	SHOULDER FOAM PAD
8	2	175-3009	CAM STOP BLOCK
7	1	175-3008	SHOULDER TOP PLATE
6	1	175-3007	ELASTIC CORD HOLDER
5	2	175-3006	SHOULDER COVER PLATE
4	2	175-3004	SHOULDER CAM CLAVICLE ASSEMBLY
3	1	175-3003	SHOULDER "U" SPRING
2	1	175-3002	SHOULDER SPACER BLOCK
1	1	175-3001	SHOULDER BOTTOM PLATE

PART LIST

UNITS ARE millimeters

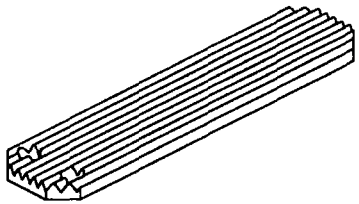
0.750

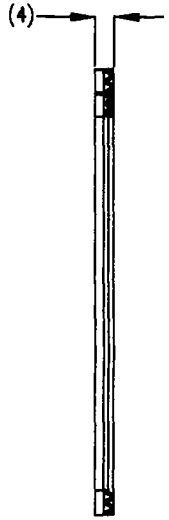
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

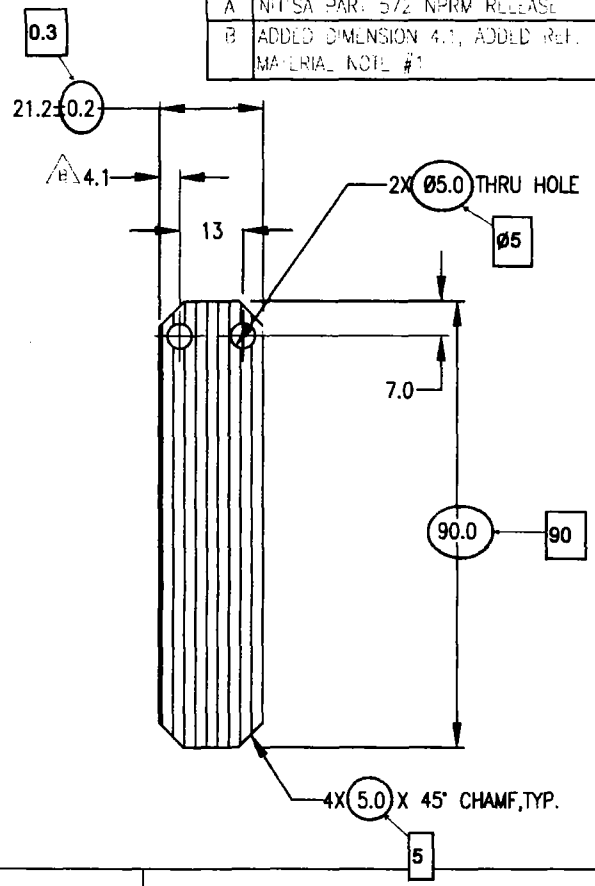
SHOULDER ASSEMBLY

SIZE	SHEET	DRAWING NO.	REV
A1	1 OF 1	175-3000	B

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	JW
B	ADDED DIMENSION 4.1, ADDED REF. TO MATERIAL NOTE #1	11/30/05	DW







RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. MATERIAL REF., 9-RIBBED POLY-V BELT "J" SECTION.

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED: 63
* unless otherwise noted

MATERIAL: SEE NOTE #1
SCALE: 1.000

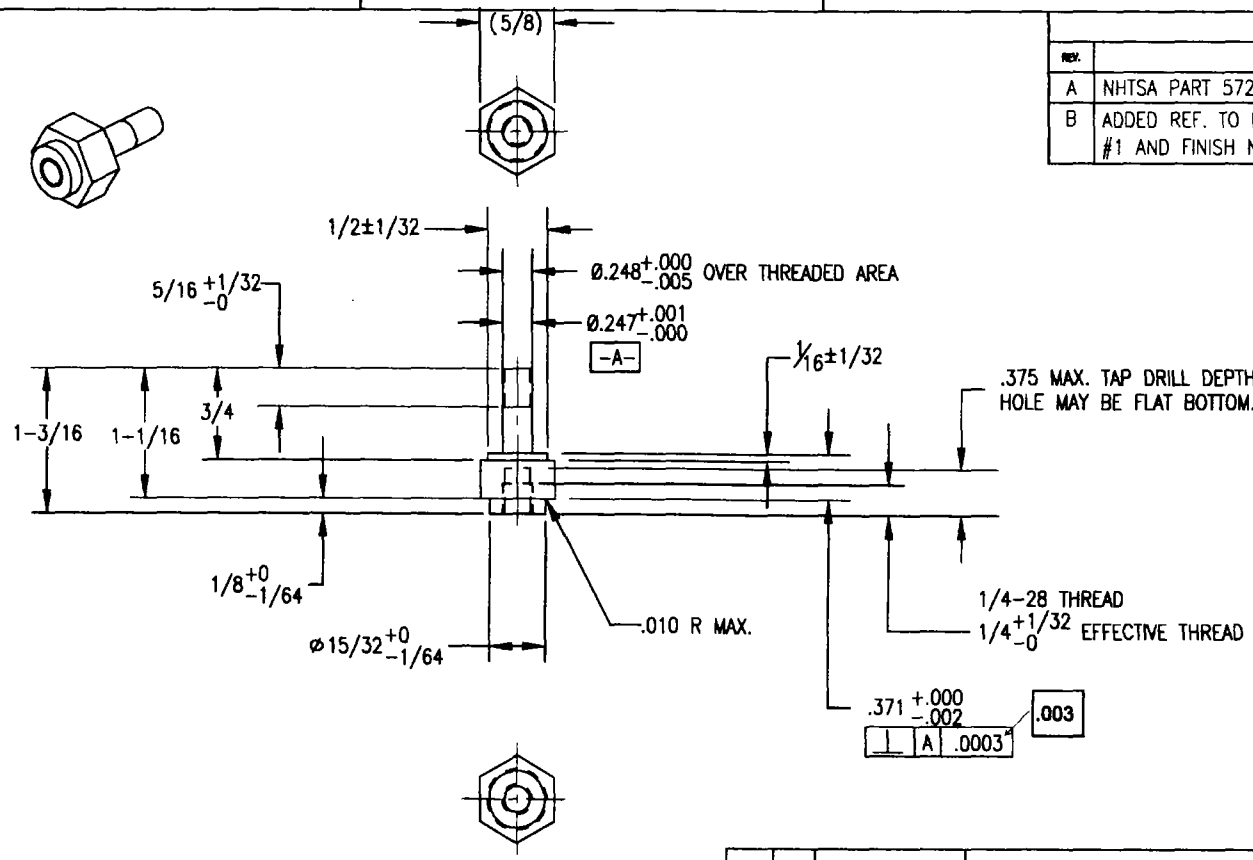
APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

CAM BUFFER PAD

SIZE A3 | SHEET 1 OF 1 | DRAWING NUMBER 175-3011 | REV. B

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED REF. TO MATERIAL SPECIFICATION NOTE #1 AND FINISH NOTE #3	12/12/05	DW



RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. MAT'L REF.: (B) COLD DRAWN HEXAGON LEDLOY 300.
   SIZE: 5/8 HEX.
2. REMOVE BURRS AND BREAK ALL SHARP EDGES.
3. FINISH REF.: (B) BLACK OXIDE.

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE inches

TOLERANCES ARE: *
DECIMALS: .X ±0.1, .XX ±0.01, .XXX ±0.005
ANGLES: ±0.5°
FRACTIONS ±1/64
MACHINED: 63
* unless otherwise noted

MATERIAL: SEE NOTE #1
SCALE: 1.000

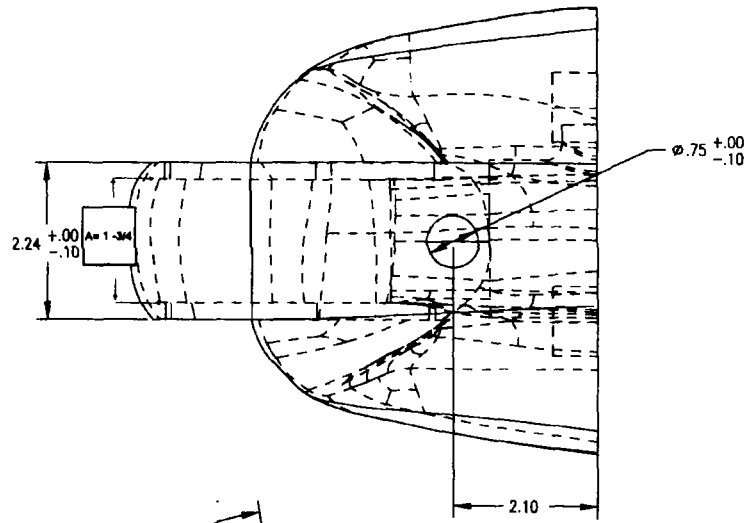
APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

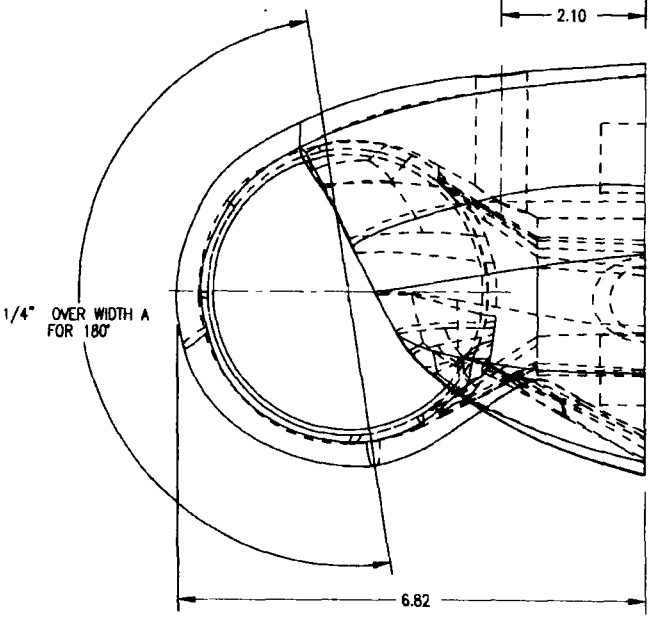
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

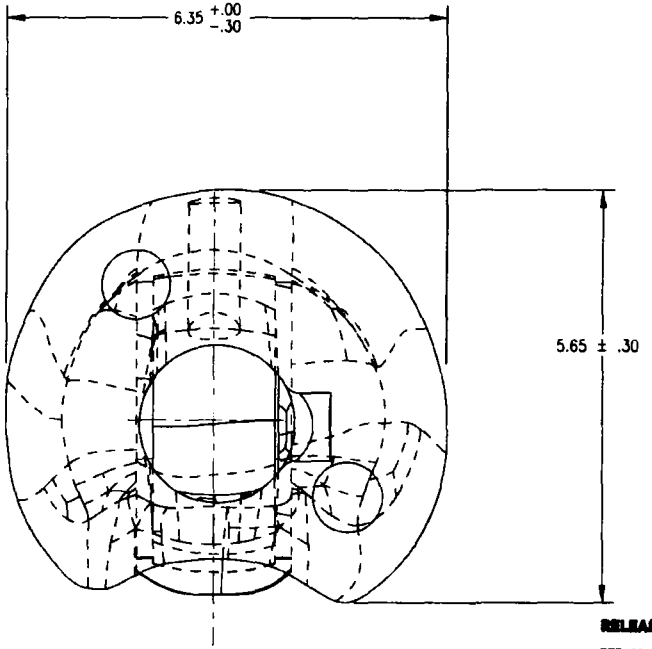
FRICTION PLATE RETAINING STUD

SIZE	SHEET	DRAWING NUMBER	REV.
B	1 OF 1	175-7058	B

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	11/30/04	DMW
B	CHANGED MATERIAL NOTE FROM "MATERIAL: PT3 VINYL AND FOAM" TO "MATERIAL REF.: PVC VINYL AND URETHANE FOAM"	12/12/05	DW







RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. MOLDED WT. 1.4± .1 LBS.
2. MATERIAL REF.: PVC VINYL AND URETHANE FOAM (B)
3. TOLERANCE OF ±.10 APPLY TO ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED.

ITEM NO.	QTY	PSCM NO.	PART NO.	DESCRIPTION

PART LIST

UNITS ARE inches

TOLERANCES ARE: *
DECIMALS: X ±0.1, XX ±0.01, XXX ±0.005
ANGLES: ±0.5°
FRACTIONS ±1/64
MACHINED: 63
* unless otherwise noted

SEE NOTE 2

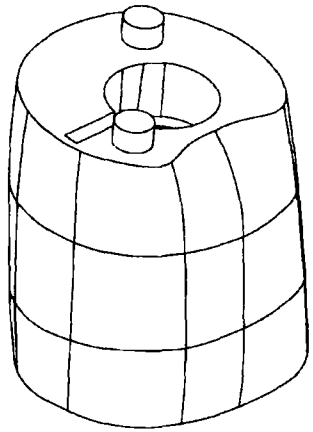
0.750

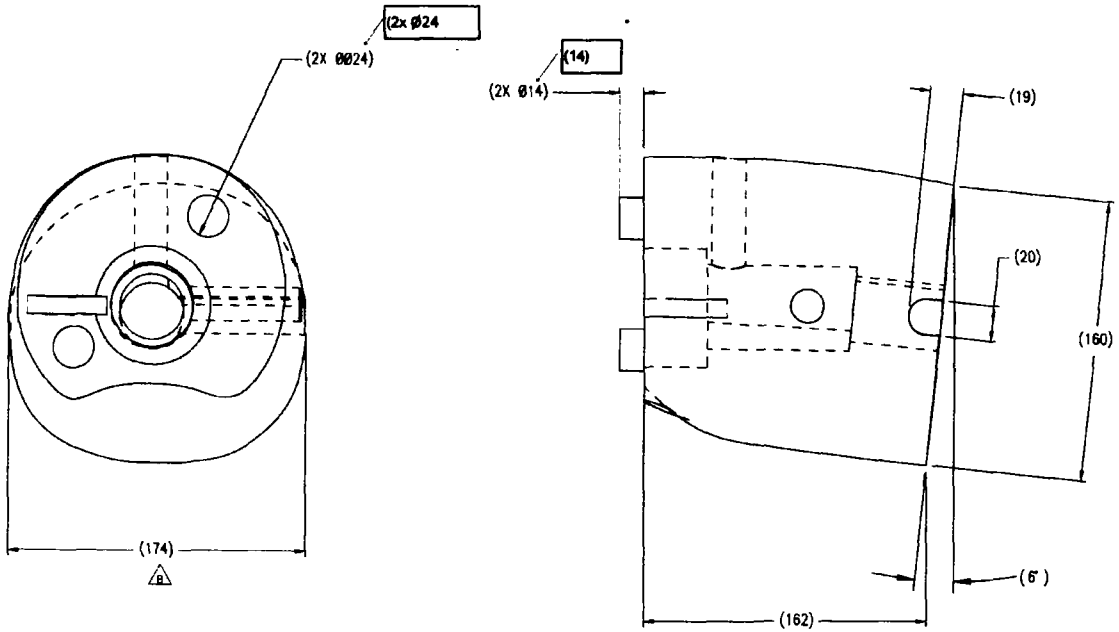
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

KNEE FLESH, LEFT

SIZE	SHEET	DRAWING NUMBER	REV
C	1 OF 1	175-7085-1	B

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	1/30/04	DW
B	ADDED DIMENSION (174), ADDED "MATERIA. REF." TO MATERIAL NOTE #1, CHANGED TOLERANCE NOTE #2 FROM ±2 TO ±3	12/12/05	DW





RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. MATERIAL REF.: PVC SKIN, ELASTOMER FOAM.
2. TOLERANCE OF ±3 MM APPLIED TO ALL DIMENSIONS.

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			

UNITS ARE millimeters

SEE NOTES

TOLERANCES ARE: *
DECIMALS: X ±0.5, .X ±0.1, .XX ±0.05
ANGLES: ±0.5°
MACHINED:

* unless otherwise noted

SCALE 0.500

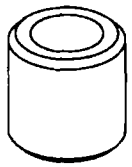
APPROVALS DATE
DRAWN
CHECKED
ENGINEER

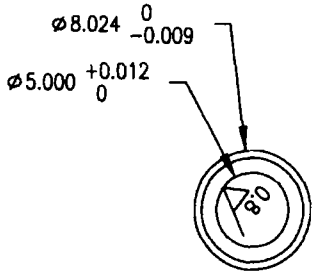
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

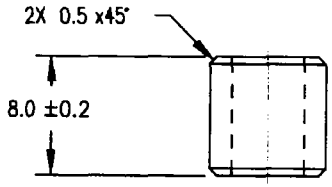
THIGH MOLDED, LEFT

SIZE A2 | SHEET 1 OF 1 | DRAWING NUMBER 175-7090-1 | REV B

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED REF. TO MATERIAL SPECIFICATION AND FINISH NOTE #2	12/14/05	DW







RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.

No Note #2

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *

DECIMALS: X ±0.5, X ±0.1, XX ±0.05

ANGLES: ±0.5°

MACHINED: 63

* unless otherwise noted

MATERIAL REF.	BRONZE
SCALE	3.000

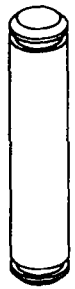
APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

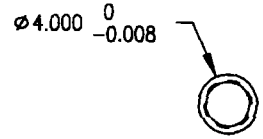
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

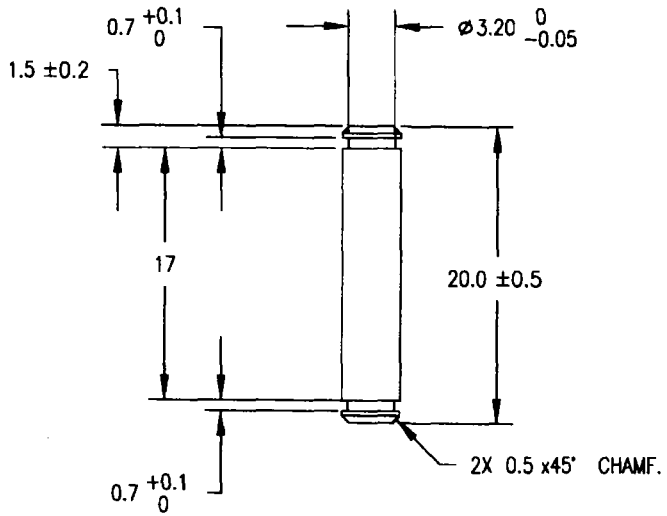
BEARING

SIZE	SHEET	DRAWING NUMBER	REV.
A3	1 OF 1	175-9013	B

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED REF. TO MATERIAL SPECIFICATION	12/14/05	DW







RELEASED
FEB. 29, 2008
NHTSA

NOTES:

1. REMOVE ALL BURRS AND BREAK ALL SHARP EDGES.

No rev Indicator

ITEM NO.	QTY	PART NO.	DESCRIPTION

PART LIST

UNITS ARE millimeters

TOLERANCES ARE: *

DECIMALS: X ±0.5, X ±0.1, XX ±0.05

ANGLES: ±0.5°

MACHINED: 63

* unless otherwise noted

MATERIAL REF.: SS 304

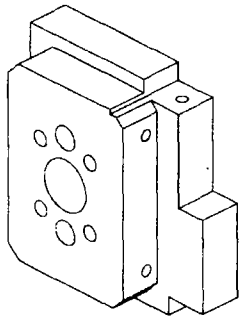
SCALE: 3.000

APPROVALS	DATE
DRAWN	
CHECKED	
ENGINEER	

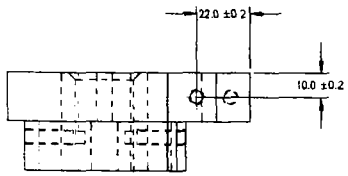
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

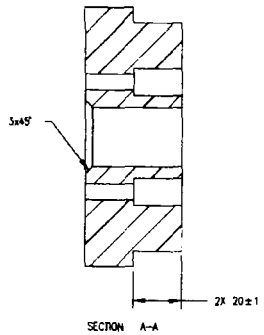
PIN, MACHINED

SIZE	SHEET	DRAWING NUMBER	REV.
A3	1 OF 1	175-9014	B

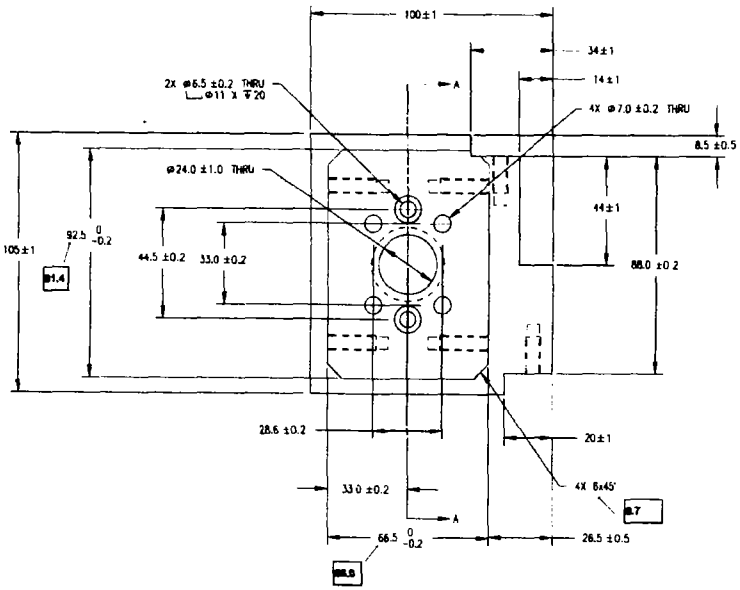


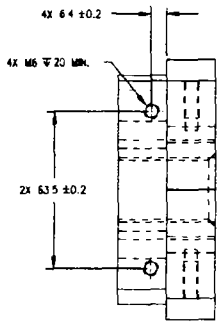
SCALE 1.000

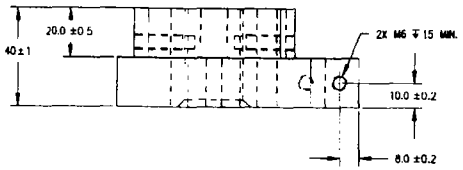




SECTION A–A







NOTES:

1. REMOVE ALL BURRS AND BREAK SHARP EDGES.
2. FINISH REF: SILVER ANODIZE

REVISION RECORD			
REV.	DESCRIPTION	DATE	BY
	[illegible]		
B	[illegible]		

RELEASED
FEB. 29, 2008
MRTBA

ITEM NO.	QTY	PART NO.	DESCRIPTION
PART LIST			

UNITS ARE millimeters

ALUM. 6082

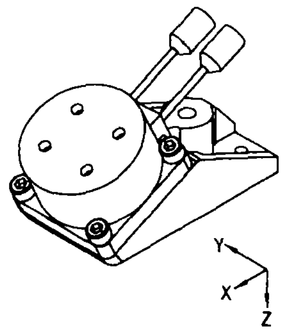
1.000

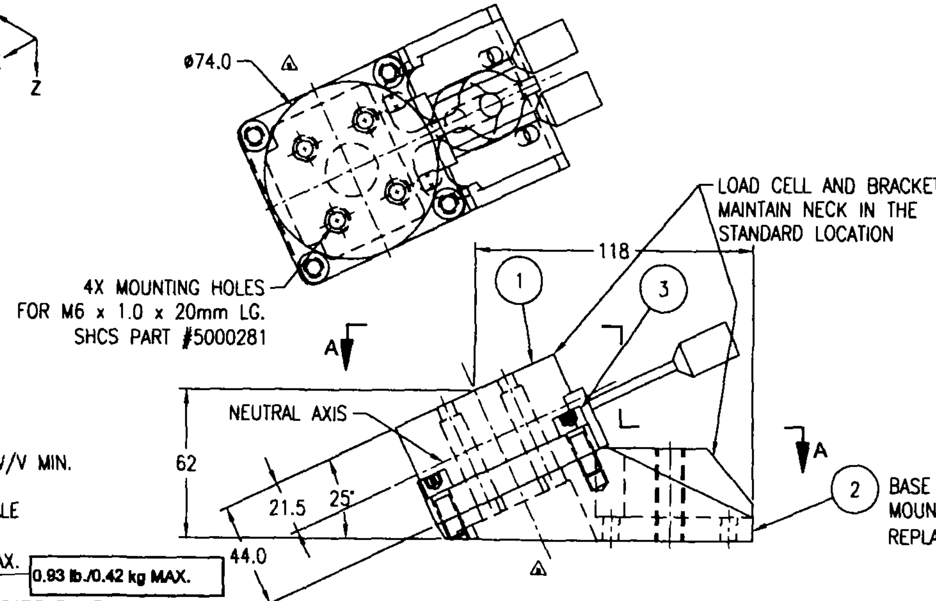
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

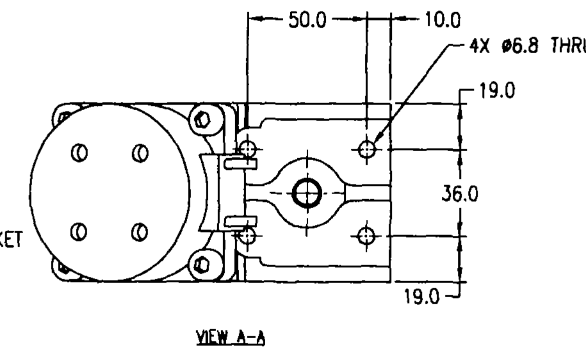
LOWER MOUNTING BASE

SIZE	SHEET	175-9027	REV
A1	1 OF 1		B

REVISION RECORD			
REV	DESCRIPTION	DATE	BY
A	NHTSA PART 572 NPRM RELEASE	7/30/04	DW
B	ADDED DIMENSIONS FOR MOUNTING BRACKET AND INFORMATION/NOTES FOR LOAD CELL, REMOVED DRAWINGS SA572-S71-2 AND SA572-S71-3, POLARITY SYMBOLS WERE REMOVED FROM FRONT AND TOP VIEWS	9/10/07	DW







VIEW A-A

SPECIFICATIONS

AXIS	CAPACITY	
	lbf	KN
F_X	2,698	12
F_Y	2,698	12
F_Z	3,147	14
	lb-in	Nm
M_X	3,983	450
M_Y	3,983	450
M_Z	2,655	300

OUTPUT AT CAPACITY: 0.75 mV/V MIN.

NONLINEARITY < 1% FULL SCALE
CROSSTALK ≤ ~~5% FULL~~ SCALE
WEIGHT: ~~0.8 lb./0.36 kg~~ MAX. 0.93 lb./0.42 kg MAX.

SIGNAL OUTPUT MUST BE COMPATIBLE WITH AND RECORDABLE IN A DATA CHANNEL AS DEFINED BY SAE J211

FREE AIR RESONANT FREQUENCY   FORCES 5000 Hz MIN.
MOMENTS 3000 Hz MIN.

OPERATING TEMPERATURE   0° TO 200°F
THERMAL SENSITIVITY   (60° TO 80°F) ≤ .03% OF READING /°F

MATERIAL: THE LOAD BEARING STRUCTURE OF THE LOAD CELL, INCLUDING PROVISIONS FOR THE LOAD CELL MOUNTING, ARE OF METAL OR METAL ALLOYS, NON-LOAD BEARING PARTS OF THE LOAD CELL, INTERNALLY AND/OR EXTERNALLY, INCLUDING WIRES AND THEIR ATTACHMENTS, MAY BE MADE OF ANY MATERIAL PROVIDED THEY DO NOT INTERFERE WITH THE PREFORMANCE OF THE LOAD CELL OR THE TRANSMISSION OF THE LOAD CELL SIGNALS.

RELEASED
FEB. 29, 2008
NHTSA

ITEM NO.	QTY.	PART NO.	DESCRIPTION	MATERIAL
3	1	5000075	SCREW, SHCS M8 x 1.25 x 20mm LG.	
2	1	SA572-S71-3	LOWER NECK LOAD CELL-MOUNTING BRACKET (NO DRAWING)	
1	1	SA572-S71-2	LOWER NECK LOAD CELL (NO DRAWING)	

UNITS ARE mm

TOLERANCES ARE: *
DECIMALS: .X ±2.5; .XX ±0.25; .XXX ±0.127
ANGLES + 0.5°
MACHINED: 63
* unless otherwise noted

SCALE 5 = 1.0
DRAWN D. WALKER 6/7/04

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

LOWER NECK LOAD CELL ASSEMBLY

ES-2re

SIZE B | DRAWING NUMBER SA572-S71-1 | REV B

SHIPPER NUMBER

SHIPPER/PACKING LIST

First Technology
Innovative Solutions

First Technology Safety Systems Inc.
47460 Galleon Drive
Plymouth MI 48170, USA
Phone: (734) 451-7878 • Fax: (734) 451-9549

SHIPPED TO: National Highway Traffic Safety Administration
ADDRESS: 1200 New Jersey Avenue, SE
CITY: Washington DC 20590
ATTENTION: Administrator

CUSTOMER'S ORDER NUMBER:	OUR NUMBER:	SHIPPED VIA:	DATED SHIPPED:

	SHIPPED	PART #	DESCRIPTION
1	1		ES 2re Petition Letter
2			
3			
4			Joe Bastian
5			
6			
7			
8			

HOW PACKED:	RECEIVED BY: